

Problem B: The Beauty Salon

Achilles: Mr. T! How good to see you! But wait... what's the hurry? I haven't seen you going that fast since that race we had a few days ago.

Tortoise: Hi Achilles. I'm on my way to Aunt Hillary's beauty salon. I have a business meeting with her and I want to get there early. Say, are you busy right now? Why don't you tag along and I'll introduce you to her.

Achilles: Really? I'll go with you, then. I've heard so much about Aunt Hillary that I've been wanting to meet her. But tell me about this business meeting.

Tortoise: Sure. You see, Aunt Hillary opened her salon recently, and it's still a very small operation. She has only two chairs in the shop at the moment, which has become a problem. Just the other day, Mr. Crab and I went to get facial treatments and while we were there, Zeno of Elea went in to get his beard trimmed. But since there weren't any chairs left, he had to leave and go get his beard trimmed somewhere else.

Achilles: What a shame. So I guess Aunt Hillary is looking to expand her salon.

Tortoise: Correct. But first she wants to estimate the magnitude of the problem. She wants to determine how many potential clients she's losing because of the current capacity of the shop. So I invented an ingenious system that identifies people going in and out of the shop, and then reports how many of those people left without being serviced.

Achilles: Sounds complicated.

Tortoise: Not really. I can explain it to you...

A string of characters S describes the sequence of people crossing the shop's entrance (going in or out). Each letter identifies a person univocally, and every letter occurs an even number of times. The first occurrence of a letter represents someone going in while the second occurrence represents the same person going out. Any further occurrences indicate that the person goes in and out again, any number of times.

The string of letters is sorted according to the correct chronological order in which people enters and exits the shop. You can assume that whenever someone enters and can't be serviced (because the chairs are full), that person leaves before anyone occupying a chair at that moment. Given the number of chairs C in the shop and the string S , find out the total number of times that somebody went in and out the shop without being serviced.

Input

Input starts with a positive integer T , that denotes the number of test cases.

Each test case is described in two lines. The first line contains the integer C and the second line contains the string S . Every character in S will be an uppercase letter from the English alphabet, and each letter will occur an even number of times inside the string.

$$T \leq 1000 ; 1 \leq C \leq 20 ; 1 \leq \text{length}(S) \leq 200$$

Output

For each test case, print the case number, followed by the number of times that a client went in and had to leave the shop without occupying a chair.

Sample Input	Output for Sample Input
3 2 TCZZCT 2 ABBABB 1 XYZYZX	Case 1: 1 Case 2: 0 Case 3: 2